

Notes on *Oncideres texana* Horn in Georgia : Oviposition.

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The following notes may be useful:

On October 14, 1906, at Myrtle, Georgia, on a large plantation, a row of three-year-old pecan trees, in a small grove, was noticed to have occasional branches neatly cut off, resembling the work of a beaver in miniature. A single specimen of the forementioned *Cerambycid* was found at work, already having partially girdled a branch. These branches already cut off were found under the trees, on the ground. They measured in diameter 11 and 12 mm. (14 branches). Each branch, and also the one in process of being cut off, contained a number of isolated, small, roundish cavities, leading to the egg and which opened into longitudinal, flat grooves just beneath the bark, measuring on the average 4.20 mm. in length, not very much longer than the egg itself. These egg cavities were generally placed at the nodes, to one side of the leaf insertion and the last one was at the top end of the severed branch, or near it. There was but a single egg cavity at each node and under each cavity, generally, there were many, short, transverse cuts in the bark resembling transverse striae. These branches found on the ground, all recently severed, contained from 10 to 18 eggs, according to their length; usually there were no egg cavities at those nodes which were near to the basal or severed end of the branches. The cavities were closed with some mucilaginous substance, which may have been exuded sap. A few other girdled branches, containing eggs, as with those found on the ground, were still hanging to the trees, but were completely girdled and dead or dying. In many cases (one direct observation), a noticeable denuded area was found at the upper end of the girdled twig *caten* by the female beetle during resting periods. This area sometimes extended out onto the petioles of the terminal leaves.

In regard to the eggs themselves. Eleven (11) eggs deposited on October 13 and 14, contained perfect embryos and were hatching on November 24 and 25, making a period of embry-

onic development of about one and one-third months. After hatching had occurred, borings are usually to be noticed at the mouth of the egg cavity.

The eggs are deposited into the branch and the latter, then girdled, not the other way round as has been stated in the literature; at least this was true in the cases of two direct observations, one of which has already been stated. This, a female, was found feeding at the apical or top end of a branch, and crawling slowly back and forth between the top and bottom ends of it, on October 15 in the afternoon. Egg cavities containing eggs were then present. She continued these indolent movements through the morning of the 16th, but at 1 P. M. that day, she began to girdle the branch, working continuously throughout the afternoon and evening until at least up to 11 P. M., when the observation was discontinued; the day had been windy and cloudy. By the following morning (17th), a half of the circuit had been completed; from 6 A. M. to 1 P. M. of the 17th, the female was either at rest, motionless or else feeding at the apex of the branch, eating the bark; it began again on the girdle at nearly the same hour as on the previous day (1 P. M.), working continuously nearly up to midnight, by which time the girdle was almost completed; the day had been cloudy with a drizzling rain. At 7 A. M., October 18th, she was found resting at the upper end of the branch; the girdle was nearly complete. At 12.30 P. M. that day, she renewed her operations, working to windward, head downward, clutching the branch which was then leaning somewhat from the action of the wind. At 1 P. M., she was working in a driving rain; about an hour afterwards the branch fell over, blown by the wind, and the female abandoned it. Plainly, in this case, girdling followed oviposition. During the time of observation, the female worked during definite periods, the last half of the day and the first half of the night.

The two beetles observed were very slow and deliberate in their actions. They would spend hours alternately feeding, resting or crawling slowly up and down the length of the branch upon which they were at work. Their locomotion, dur-

ing the wandering periods, was slow, like an automaton, and the long antennae were nearly always held then so as to embrace, more or less, the branch. They were not curled around the branch but while in their natural positions held down against it, so that the proximal half of each antennae touched the branch on each side at some point along its length.

Questions and Answers from a Final Examination in Entomology—I.

(Sent to the NEWS by the Professor of Entomology in a university in one of the Western States.)

1. What special senses do insects possess?

"Insects can measure electrical currents with their feet, and can either see or have some method of communication through walls. The sense of direction is well shown as when it has gathered enough honey it will go straight to the hive."

2. Define parasitic, predaceous, secondary and tertiary parasitism.

"Parasitic means the form of a disease which almost all of the insects are infested."

"Parasitic means insects that are dependent upon other insects and plants for their food. The insects and plants they live on are called the host."

"Predaceous means that the insects must live on vegetation."

"An insect is predaceous if it takes the food away from another insect."

"Predaceous, regards food habit, it means very vicious food habit, being always hungry."

"Secondary parasitism is feeding on one host and partly on others."

"Secondary and tertiary parasitism mean the different forms of parasitic disease."

3. Why do insects moult?

"Insects moult in order to become more perfect. Every time an insect moults it is further developed."

4. Name the typical stages in complete metamorphosis.

"The typical stages in complete metamorphosis are egg; larva, pupa and adult. When hatched from the egg it enters the larva state where it crawls around for awhile like a worm. It finally enters the pupa stage where legs are formed and wings and as soon as these are formed it becomes an adult."

5. Define elytron, cercus and tegmina.

"Elytron is the hard, black portion on the back of the beetle."